

What is claimed is:

1. A method for transmitting video data, comprising the steps of:
 - (a) identifying one of the group consisting of: (1) an average or minimum available bandwidth of a link over which a data stream of a given video segment is to be transmitted; and (2) a capability of a recipient host to which the data stream is to be transmitted;
 - (b) selecting a corresponding one of the group consisting of: (1) one of a plurality of predetermined ranges of bandwidths, so that the selected range contains the identified average or minimum available bandwidth; and (2) one of a plurality of different data stream types, so that the identified capability of the recipient host is used to process data of the selected data stream type;
 - (c) coding the data stream in a manner which takes advantage of the range of bandwidths or type of data stream that has been or is to be selected; and
 - (d) transmitting the coded data stream over the link to the recipient host.
2. The method of claim 1, wherein
 - step (c) precedes step (a), and
 - step (c) includes coding a plurality of data streams, each corresponding to a respectively different one of the plurality of predetermined ranges of bandwidths.
3. The method of claim 2, wherein a scalable coding technique is used, and two of the plurality of data streams have a common base layer and respectively different enhancement layers.
4. The method of claim 3, wherein a first one of the two data streams has an enhancement layer with frequency weighting, selective enhancement or any other quality improvement tool targeted towards a particular bit-rate range, and a second one of the two data streams has an enhancement layer without frequency weighting.
5. The method of claim 1, wherein
 - step (a) precedes step (c), and

steps (a), (b) and (c) are performed in real time or near real time in response to a request for the video segment.

6. The method of claim 1, wherein:

step (a) precedes step (c),

steps (a), (b), (c) and (d) are performed in first and second iterations for the same video segment,

a respectively different average or minimum available bandwidth or recipient host capability is identified in step (a) during each of the first and second iterations,

a respectively different coded data stream is provided for the same video segment in step (c) during each of the first and second iterations.

7. The method of claim 1, wherein step (a) includes receiving from the recipient host an identification of the average or minimum available bandwidth of the link or an identification of the recipient host capability when the link is established.

8. The method of claim 1, wherein the identified capability is the ability to perform motion compensation.

9. The method of claim 1, wherein:

step (a) includes determining an average or minimum available bandwidth of a link over which one of the data streams is to be transmitted;

step (b) includes selecting the one of the plurality of ranges having a greatest data rate among all of the plurality of ranges that can be accommodated by a data rate of the link over which the video data are to be transmitted; and

step (c) includes coding a plurality of data streams using a fine granular scalability technique, each of the plurality of data streams corresponding to a respectively different range of data rates at which the data streams are to be transmitted.

10. A system for transmitting video data, comprising the steps of:

(a) means for identifying one of the group consisting of: (1) an average or minimum available bandwidth of a link over which a data stream of a given video segment is to be

transmitted; and (2) a capability of a recipient host to which the data stream is to be transmitted;

- (b) means for selecting a corresponding one of the group consisting of: (1) one of a plurality of predetermined ranges of bandwidths, so that the selected range contains the identified bandwidth; and (2) one of a plurality of different data stream types, so that the identified capability of the recipient host is used to process data of the selected data stream type;
- (c) means for coding the data stream in a manner which takes advantage of the range of bandwidths or type of data stream that has been or is to be selected; and
- (d) means for transmitting the coded data stream over the link to the recipient host.

11. The system of claim 10, wherein the coding means codes a plurality of data streams representing the same video segment, each data stream corresponding to a respectively different one of the plurality of predetermined ranges of bandwidths or a respectively different one of the plurality of data stream types, the system further comprising:

means for storing the plurality of data streams, so that any one of the plurality of data streams is available for transmission upon request.

12. A machine readable medium that contains computer program code, wherein, when the computer program code is executed by a processor, the processor performs a method for transmitting video data, comprising the steps of:

- (a) identifying one of the group consisting of: (1) an average or minimum available bandwidth of a link over which a data stream of a given video segment is to be transmitted; and (2) a capability of a recipient host to which the data stream is to be transmitted;
- (b) selecting a corresponding one of the group consisting of: (1) one of a plurality of predetermined ranges of bandwidths, so that the selected range contains the identified bandwidth; and (2) one of a plurality of different data stream types, so that the identified capability of the recipient host is used to process data of the selected data stream type;

- (c) coding the data stream in a manner which takes advantage of the range of bandwidths or type of data stream that has been or is to be selected; and
- (d) transmitting the coded data stream over the link to the recipient host.

13. The machine readable medium of claim 12, wherein
step (c) precedes step (a), and
step (c) includes coding a plurality of data streams, each corresponding to a respectively different one of the plurality of predetermined ranges of bandwidths.

14. The machine readable medium of claim 12, wherein:
step (a) includes determining an average or minimum available bandwidth of a link over which one of the data streams is to be transmitted;
step (b) includes selecting the one of the plurality of ranges having a greatest data rate among all of the plurality of ranges that contain a data rate of the link over which the video data are to be transmitted; and
step (c) includes coding a plurality of data streams using a fine granular scalability technique, each of the plurality of data streams corresponding to a respectively different range of data rates at which the data streams are to be transmitted.

15. The machine readable medium of claim 12, wherein
step (a) precedes step (c), and
steps (a), (b) and (c) are performed in real time or near real time in response to a request for the video segment.

16. The machine readable medium of claim 12, wherein:
step (a) precedes step (c),
steps (a), (b), (c) and (d) are performed in first and second iterations for the same video segment,
a respectively different average or minimum available bandwidth or recipient host capability is identified in step (a) during each of the first and second iterations,
a respectively different coded data stream is provided for the same video segment in step (c) during each of the first and second iterations.

17. A signal encoded with data representing computer program code, wherein, when the computer program code is executed by a processor, the processor performs a method for transmitting video data, comprising the steps of:

- (a) identifying one of the group consisting of: (1) an average or minimum available bandwidth of a link over which a data stream of a given video segment is to be transmitted; and (2) a capability of a recipient host to which the data stream is to be transmitted;
- (b) selecting a corresponding one of the group consisting of: (1) one of a plurality of predetermined ranges of bandwidths, so that the selected range contains the identified bandwidth; and (2) one of a plurality of different data stream types, so that the identified capability of the recipient host is used to process data of the selected data stream type;
- (c) coding the data stream in a manner which takes advantage of the range of bandwidths or type of data stream that has been or is to be selected; and
- (d) transmitting the coded data stream over the link to the recipient host.

18. The signal of claim 17, wherein

- step (c) precedes step (a), and
- step (c) includes coding a plurality of data streams, each corresponding to a respectively different one of the plurality of predetermined ranges of bandwidths.

19. The signal of claim 17, wherein:

- step (a) includes determining an average or minimum available bandwidth of a link over which one of the data streams is to be transmitted;
- step (b) includes selecting the one of the plurality of ranges having a greatest data rate among all of the plurality of ranges that contain a data rate of the link over which the video data are to be transmitted; and
- step (c) includes coding a plurality of data streams using a fine granular scalability technique, each of the plurality of data streams corresponding to a respectively different range of data rates at which the data streams are to be transmitted.

20. The method of claim 1, wherein step (b) includes selecting which data stream to transmit based on the capabilities of the recipient host.

21. The method of claim 1, further comprising switching between FGS and MC-FGS structures based on bandwidth.